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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Kazuhisa KASHIWAZAKI et al.

Application No.: 09/978,063

Group Art Unit: 1742

Confirmation No.: 4184

Examiner: COMBS, JANELL A

Filed: October 17, 2001

For: ALUMINUM SHEET MATERIAL FOR AUTOMOBILE AND METHOD OF  
PRODUCING THE SAME

DECLARATION UNDER 37 C.F.R. § 1.132

Honorable Commissioner of Patents  
and Trademarks  
Washington, D.C. 20231

Sir:

I, Yoichiro BEKKI, hereby declare and state that:

1. I am a Japanese citizen residing at c/o  
Furukawa-Sky Aluminum Corp., 2-1, Kinshi 1-chome, Sumida-  
ku, Tokyo, Japan.

I am a graduate from Department of Metal Engineering,  
Faculty of Engineering, The University of Tokyo, in March  
of 1980.

From April 1980 to September 2003, I was employed by  
FURUKAWA ALUMINUM CO., LTD. (merged with THE FURUKAWA  
ELECTRIC CO., LTD.). Since October 2003, I have been  
employed by Furukawa-Sky Aluminum Corp., which was a  
company divided from THE FURUKAWA ELECTRIC CO., LTD.

From 1980 to 1986, I was engaged in research and

development of structure control in aluminum hot rolling, and in development of can-body materials, in the Nikko Technological Laboratory (renamed to Metal Research Center) of THE FURUKAWA ELECTRIC CO., LTD. From 1986 to 1991, I was engaged in research for aluminum hot rolling, and in research and development of aluminum can-body materials and aluminum materials for foils and presensitized plates, in Fukui rolling technology section (absorbed as one of sections of the Metal Research Center). Since 1991, I have been engaged in research and development of working of aluminum sheet materials for automobiles; in development of aluminum materials for electrical machinery and memory discs; in development of recycle technology of aluminum scraps; and in development of aluminum extrusion materials for automobiles, in the Nikko Technological Laboratory (renamed to Metal Research Center, and now it is Technical Research Division of Furukawa-Sky Aluminum Corp.).

I am one of the joint inventors of the subject matter of the United States Patent Application Serial No. 09/978,063, filed on October 17, 2001, and am thus intimately familiar with the contents of the application, its prosecution before the United States Patent & Trademark Office, and the references cited therein.

2. I have studied the contents of the cited

"Aluminum and Aluminum Alloys" (ASM International, 1993, pp.290-297, 319), Japanese Patent Unexamined Publication No. 10-110232, Japanese Patent Unexamined Publication No. 58-031054, and U.S. Patent No. 4,718,948.

3. To show the superiority of the present invention, the following tests were conducted, by me or under my supervision:

#### Test

##### A. Sheet materials used in these experiments.

Sheet materials were prepared in the same manner as in Example 2 from line 16 on page 23 to line 14 on page 24 of the present specification. The details are shown below.

The aluminum sheets for the experiments were prepared from blended automobile aluminum parts scraps, and pure aluminum (not recycled scraps), as raw materials.

The compositions of the sheet materials subjected to the experiments are shown in Table I. The sheet materials were prepared as follows: Each of the blended raw materials was melted and cast into an ingot of 300 mm width, 1200 mm length, and 120 mm thickness. The cast ingots were subjected to a homogenizing treatment at a temperature of 520 °C for one hour, and then, to hot-rolling, with a starting temperature of 480 °C and a finishing (or ending) temperature of 340 °C, to obtain hot-rolled sheet materials of 2 mm thickness (rolling

reduction: 98.3%). The thus-obtained sheet materials were subjected to a final annealing at a temperature of 530 °C, and thereafter to cooling at a rate of 3 °C/sec, to obtain aluminum sheet materials  $X_1$  and  $Y_1$  (T4 materials).

Other aluminum sheet materials  $X_2$  and  $Y_2$  were prepared in the same manner as the above  $X_1$  and  $Y_1$ , except that the rolling reduction was changed to 96%.

Table I

	Composition (wt%)								
	Cu	Fe	Si	Mn	Mg	Cr	Ti	Zn	Al
X	0.70	0.80	3.10	0.48	0.46	0.04	0.03	0.80	balance
Y	0.65	0.80	3.52	0.52	0.48	0.05	0.03	0.65	balance

#### B. Results

The sheet materials thus prepared were subjected to tension testing, bending property testing, the Charpy impact test, and spot welding testing, using the same conditions as in Example 2 in lines 1 to 23 on page 26 of the present specification, to evaluate their characteristics. The results are shown in Table II. All test results of  $X_1$ ,  $X_2$ ,  $Y_1$ , and  $Y_2$  were favorable and as good as those of  $G_1$  to  $J_1$ , and  $G_2$  to  $J_2$ , shown in Tables 9 and 10 on pages 27 to 28 of the present specification.

Table II

		X <sub>1</sub>	X <sub>2</sub>	Y <sub>1</sub>	Y <sub>2</sub>
Rolling Reduction		98%	96%	98%	96%
Tensile strength (MPa)		264	262	272	270
Proof strength (MPa)		149	146	153	151
Elongation (%)		24.6	24.3	23.0	22.8
Bending property		Good	Good	Good	Good
Charpy impact value (kgfm/cm <sup>2</sup> )		3.24	2.94	3.15	3.08
Minimum electric current required when spot welding (kA)		30	30	29	29
Occurrence number of "NO GOOD" in spot welding	20kA	2	2	0	0
	30kA	1	0	0	0
	Passed or failed	○	○	○	○

Note: "○" denotes "passed" the spot welding test

The data already of record in the specification and the supplemental data submitted herewith demonstrate unexpectedly superior results of the claimed aluminum sheet material for automobile and method of producing thereof over those of the cited prior art.

4. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are

punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: December 26, 2003

Yoichiro Bekki  
Yoichiro BEKKI